

Application for FCC Certificate
On Behalf of
LG Electronics U.S.A., Inc.

LCD Monitor

Model No.: W1954TQV

Serial No.: E2008112705

FCC ID : BEJW1954TQV

Prepared For : LG Electronics U.S.A., Inc.
1000 Sylvan Avenue, Englewood Cliffs,
NJ 07632, United States

Prepared By : Audix Technology (Shanghai) Co., Ltd.
3F 34Bldg 680 Guiping Rd,
Caohejing Hi-Tech Park,
Shanghai 200233, China

Tel: +86-21-64955500
Fax: +86-21-64955491

Report No. : ACI-F08072
Date of Test : Nov 29-Dec 03, 2008
Date of Report : Dec 10, 2008

TABLE OF CONTENTS

	Page
1 SUMMARY OF STANDARDS AND RESULTS.....	4
1.1 Description of Standards and Results.....	4
2 GENERAL INFORMATION.....	5
2.1 Description of Equipment Under Test.....	5
2.2 Peripherals.....	6
2.3 Description of Test Facility.....	7
2.4 Measurement Uncertainty.....	7
3 CONDUCTED EMISSION TEST.....	8
3.1 Test Equipment.....	8
3.2 Block Diagram of Test Setup.....	8
3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)].....	9
3.4 Test Configuration.....	9
3.5 Operating Condition of EUT.....	10
3.6 Test Procedures.....	10
3.7 Test Results.....	11
4 RADIATED EMISSION TEST.....	18
4.1 Test Equipment.....	18
4.2 Block Diagram of Test Setup.....	18
4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)].....	19
4.4 Test Configuration.....	19
4.5 Operating Condition of EUT.....	20
4.6 Test Procedures.....	20
4.7 Test Results.....	21
5 DEVIATION TO TEST SPECIFICATIONS.....	28
6 DEBUG DESCRIPTION.....	29

TEST REPORT FOR FCC CERTIFICATE

Applicant : LG Electronics U.S.A., Inc.
Manufacturer : LG Electronics Nanjing Display Co., Ltd.
EUT Description : LCD Monitor
(A) Model No. : W1954TQV
(B) Serial No. : E2008112705
(C) Power Supply : 120V/60Hz

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 2008
AND ANSI C63.4-2003*

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B (Class B) and ICES-003, Issue 4 February 2004 (CISPR 22:2002) limits both radiated and conducted emissions.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report shows that the EUT (M/N: W1954TQV; S/N: E2008112705) which was tested in 3m anechoic chamber on Nov 29-Dec 03, 2008 is technically compliance with the FCC official limits also.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

This report contains data that are not covered by the NVLAP accreditation.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Date of Test : Nov 29-Dec 03, 2008 Date of Report : Dec 10, 2008

Producer : Alan He
ALAN HE / Assistant

Review : Dio Yang
DIO YANG / Supervisor

 For and on behalf of
Audix Technology (Shanghai) Co., Ltd.

Signatory : Sammy Chen
Authorized Signature EMC SAMMY CHEN / Assistant Manager

1 SUMMARY OF STANDARDS AND RESULTS

1.1 Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Description of Test Item	Standard	Limits	Results
EMISSION			
Conducted Disturbance at the Mains Terminal	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2008 AND ANSI C63.4-2003	15.107(a) Class B	Pass
Radiated Disturbance	FCC RULES AND REGULATIONS PART 15 SUBPART B OCTOBER 2008 AND ANSI C63.4-2003	15.109(a) Class B	Pass

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description	:	LCD Monitor
Type of EUT	:	☒ Production ☐ Pre-product ☐ Pro-type
Model No.	:	W1954TQV
Serial No.	:	E2008112705
Real Power	:	35.00W
Applicant	:	LG Electronics U.S.A., Inc. 1000 Sylvan Avenue, Englewood Cliffs, NJ 07632, United States
Manufacturer	:	LG Electronics Nanjing Display Co., Ltd. No.346, Yao Xin Road, Economic & Technical Development Zone, Nanjing, China
LCD Panel	:	Manufacturer : AU Optronics M/N : M190PW01
Max Resolution	:	DVI 1440*900@60Hz D-Sub 1440*900@75Hz
D-Sub Cable #1	:	Shielded, Detachable, 1.85m, with two cores on cable
D-Sub Cable #2	:	Shielded, Detachable, 1.85m, with two cores in connector
DVI Cable #1	:	Shielded, Detachable, 1.85m, with two cores on cable
DVI Cable #2	:	Shielded, Detachable, 1.85m, with two cores in connector
Power Cord	:	Unshielded, Detachable, 1.80m
Note	:	After evaluation, the D-Sub cable#1 and DVI cable#1 were used in the test for they will cause the maximum emission.

Remark:

The EUT is a LCD Monitor which input/output ports as follows:

- (1) One D-Sub Port : Connected with PC
- (2) One DVI Port : Connected with PC
- (3) One AC In Port : Connected with Power

2.2 Peripherals

2.2.1 PC

Manufacturer : HP
Model Number : dx7400MT
Serial Number : CNG8130K89
Power Cord : Unshielded, Detachable, 1.8m
Certificate : FCC DoC; CE/EMC; VCCI; C-Tick; UL
BSMI (R33001) 3C (A000111)
MIC (E-A011-04-2659(B))

2.2.2 Printer

Manufacturer : HP
Model Number : C3990A
Serial Number : JPZX020487
Data Cable : Shielded, Detachable, 1.5m
Certificate : GS, CE/EMC, C-Tick, FCC DoC

2.2.3 Keyboard

Manufacturer : Microsoft
Model Number : RT2300
Serial Number : 7668200662248
Data Cable : Shielded, Undetachable, 1.8m
Certificate : CE/EMC, FCC DoC, VCCI, MIC, C-Tick,
BSMI

2.2.4 Mouse

Manufacturer : Microsoft
Model Number : RT2300
Serial Number : 6965712071551
Data Cable : Shielded, Undetachable, 1.85m.
Certificate : FCC DoC, VCCI, CE/EMC, MIC, GS

2.2.5 Modem

Manufacturer : TP-LINK
Model Number : TM-EC5658V
Serial Number : 07123301053
Data Cable : Shielded, Detachable, 1.8m
Certificate : FCC DoC, CE/EMC, CCC

2.3 Description of Test Facility

Site Description (Semi-Anechoic Chamber) : Sept. 17, 1998 file on
July 26, 2006 Renewed
Federal Communications Commission
FCC Engineering Laboratory
7435 Oakland Mills Road
Columbia, MD 21046, USA

Name of Firm : Audix Technology (Shanghai) Co., Ltd.

Site Location : 3F 34Bldg 680 Guiping Rd,
Caohejing Hi-Tech Park,
Shanghai 200233, China

NVLAP Lab Code : 200371-0

2.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty: U = 1.26 dB
Radiated Emission Expanded Uncertainty : U = 3.02 dB

3 CONDUCTED EMISSION TEST

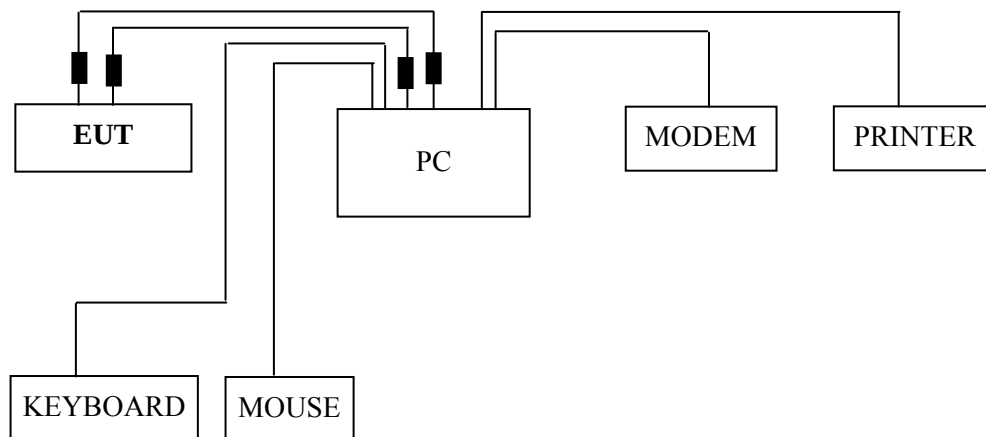
3.1.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESHS10	830223/007	Apr 02, 2008	Apr 02, 2009
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	Apr 02, 2008	Apr 02, 2009
3.	Line Impedance Stabilization Network (LISN)	Kyoritsu	KNW-407	8-1280-4	Apr 02, 2008	Apr 02, 2009
4.	50 Ω Coaxial Switch	Anritsu	MP59B	6200426389	Sep 19, 2008	Mar 19, 2009
5.	50 Ω Terminator	Anritsu	BNC	001	Apr 02, 2008	Apr 02, 2009
6.	Software	Audix	E3	SET00200 9804M592	--	--

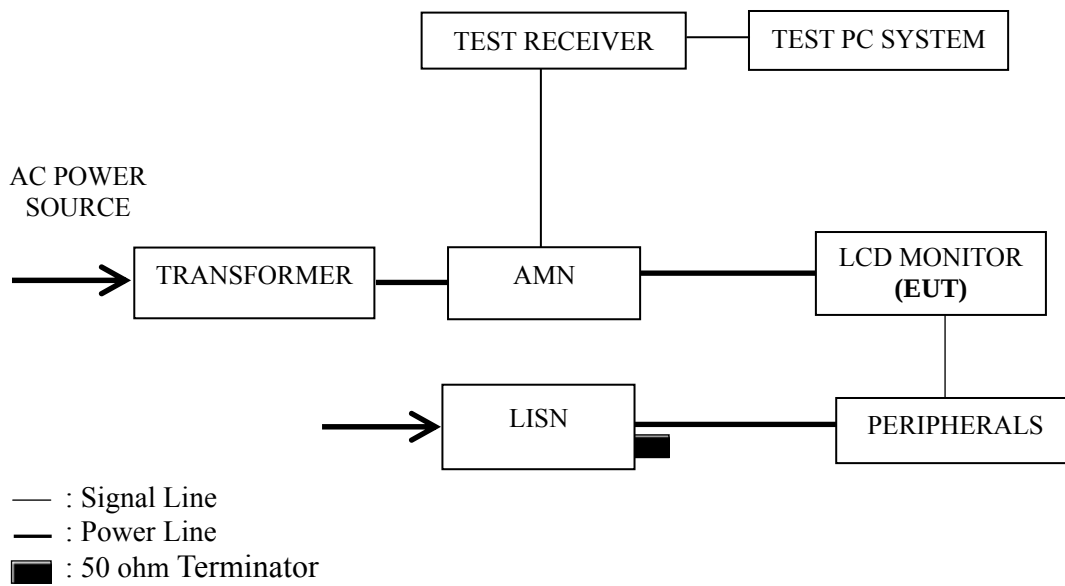
3.2 Block Diagram of Test Setup

3.2.1 EUT & Peripherals



■ : Ferrite core

3.2.2 Conducted Disturbance Test Setup



3.3 Conducted Emission Limit [FCC Part 15 Subpart B 15.107(a)]

Frequency Range (MHz)	Limits dB (μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66~56	56~46
0.5 ~ 5	56	46
5 ~ 30	60	50
NOTE 1 – The lower limit shall apply at the transition frequencies. NOTE 2 – The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz~0.50 MHz		

3.4 Test Configuration

The EUT (listed in Sec.2.1) and the peripherals (listed in Sec 2.2) were installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner that tends to maximize its emission level in a normal application.

3.5 Operating Condition of EUT

3.5.1 Setup the EUT and peripherals as shown in Sec. 3.2.

3.5.2 Turn on the power of all equipments and the EUT.

3.5.3 Set the contrast & brightness of EUT to maximum.

3.5.4 PC system ran the self-test program “EMC Test” by windows XP and sent “H” characters to EUT through graphic card, the EUT’s screen displayed and filled with “H” pattern by its resolution (Via D-Sub & DVI Input).

3.5.5 Repeat above procedure from 3.5.3 to 3.5.4 for difference test mode.

3.5.6 The other peripherals devices were driven and operated during the test.

3.5.7 The test modes are as follows:

Test Mode
D-Sub 640*480@60Hz
D-Sub 1024*768@60Hz
D-Sub 1440*900@75Hz
DVI 640*480@60Hz
DVI 1024*768@60Hz
DVI 1440*900@60Hz

3.6 Test Procedures

The EUT and peripherals were connected to the power mains through an Artificial Mains Network (AMN). This provided a 50 ohm coupling impedance for the measuring equipment.

Both sides of AC line (Line & Neutral) were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed or manipulated according to ANSI C63.4:2003 during conducted emission test.

The bandwidth of R&S Test Receiver ESHS10 was set at 10 kHz.

The frequency range from 150 kHz to 30 MHz was checked.

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7.

3.7 Test Results

< PASS >

The frequency and amplitude of the highest conducted emission relative to the limit is reported. All emissions not reported below are too low against the prescribed limits.

Test Mode	Data Page
D-Sub 640*480@60Hz	P12
D-Sub 1024*768@60Hz	P13
D-Sub 1440*900@75Hz	P14
DVI 640*480@60Hz	P15
DVI 1024*768@60Hz	P16
DVI 1440*900@60Hz	P17

NOTE 1 – Factor = Cable Loss + AMN Factor.

NOTE 2 – Emission Level = Meter Reading + Factor.

NOTE 3 – “QP” means “Quasi-Peak” values, “AV” means “Average” values.

NOTE 4 –The worst case is for D-Sub 640*480@60Hz test mode. The worst emission is detected at 0.150 MHz (Quasi-Peak Value) with corrected signal level of 59.55 dB (μV) (limit is 66.00 dB (μV)), when the Line of the EUT is connected to AMN.

EUT : LCD Monitor Temperature : 21°C

Model No. : W1954TQV Humidity : 50%RH

Serial No. : E2008112705 Date of Test : Nov 29, 2008

Test Mode : D-Sub 640*480@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.150	59.32	0.23	59.55	66.00	6.45	QP
	0.223	49.47	0.21	49.68	62.70	13.02	
	0.731	45.51	0.23	45.74	56.00	10.26	
	2.540	28.39	0.31	28.70	56.00	27.30	
	5.653	28.01	0.43	28.44	60.00	31.56	
	10.905	26.64	0.62	27.26	60.00	32.74	
	0.150	47.68	0.23	47.91	56.00	8.09	AV
	0.223	44.47	0.21	44.68	52.70	8.02	
	0.731	38.51	0.23	38.74	46.00	7.26	
	2.540	25.39	0.31	25.70	46.00	20.30	
	5.653	24.01	0.43	24.44	50.00	25.56	
	10.905	22.64	0.62	23.26	50.00	26.74	
Neutral	0.223	49.14	0.21	49.35	62.70	13.35	QP
	0.300	41.34	0.22	41.56	60.24	18.68	
	0.731	43.43	0.23	43.66	56.00	12.34	
	2.461	29.26	0.28	29.54	56.00	26.46	
	6.186	35.22	0.42	35.64	60.00	24.36	
	22.180	39.46	0.62	40.08	60.00	19.92	
	0.223	43.32	0.21	43.53	52.70	9.17	AV
	0.300	35.45	0.22	35.67	50.24	14.57	
	0.731	38.64	0.23	38.87	46.00	7.13	
	2.461	23.31	0.28	23.59	46.00	22.41	
	6.186	30.65	0.42	31.07	50.00	18.93	
	22.180	33.60	0.62	34.22	50.00	15.78	

TEST ENGINEER: YONG XU

EUT : LCD Monitor Temperature : 21°C

Model No. : W1954TQV Humidity : 50%RH

Serial No. : E2008112705 Date of Test : Nov 29, 2008

Test Mode : D-Sub 1024*768@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.223	46.67	0.21	46.88	62.70	15.82	QP
	0.442	34.31	0.22	34.53	57.02	22.49	
	0.731	43.77	0.23	44.00	56.00	12.00	
	2.540	27.83	0.31	28.14	56.00	27.86	
	10.125	27.28	0.60	27.88	60.00	32.12	
	17.109	26.70	0.71	27.41	60.00	32.59	
	0.223	41.21	0.21	41.42	52.70	11.28	AV
	0.442	29.54	0.22	29.76	47.02	17.26	
	0.731	38.50	0.23	38.73	46.00	7.27	
	2.540	22.14	0.31	22.45	46.00	23.55	
	10.125	23.51	0.60	24.11	50.00	25.89	
	17.109	20.16	0.71	20.87	50.00	29.13	
Neutral	0.223	48.56	0.21	48.77	62.70	13.93	QP
	0.297	40.62	0.22	40.84	60.32	19.48	
	0.731	43.49	0.23	43.72	56.00	12.28	
	4.384	29.12	0.34	29.46	56.00	26.54	
	5.564	34.33	0.39	34.72	60.00	25.28	
	17.568	36.18	0.56	36.74	60.00	23.26	
	0.223	42.56	0.21	42.77	52.70	9.93	AV
	0.297	34.62	0.22	34.84	50.32	15.48	
	0.731	37.49	0.23	37.72	46.00	8.28	
	4.384	24.12	0.34	24.46	46.00	21.54	
	5.564	28.33	0.39	28.72	50.00	21.28	
	17.568	31.18	0.56	31.74	50.00	18.26	

TEST ENGINEER: YONG XU

EUT : LCD Monitor Temperature : 21°C

Model No. : W1954TQV Humidity : 50%RH

Serial No. : E2008112705 Date of Test : Nov 29, 2008

Test Mode : D-Sub 1440*900@75Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.227	44.07	0.21	44.28	62.57	18.29	QP
	0.302	35.79	0.22	36.01	60.19	24.18	
	0.440	33.52	0.22	33.74	57.07	23.33	
	0.731	42.73	0.23	42.96	56.00	13.04	
	6.557	29.78	0.49	30.27	60.00	29.73	
	17.109	25.53	0.71	26.24	60.00	33.76	
	0.227	39.07	0.21	39.28	52.57	13.29	AV
	0.302	30.79	0.22	31.01	50.19	19.18	
	0.440	29.52	0.22	29.74	47.07	17.33	
	0.731	37.73	0.23	37.96	46.00	8.04	
	6.557	24.78	0.49	25.27	50.00	24.73	
	17.109	21.53	0.71	22.24	50.00	27.76	
Neutral	0.224	44.92	0.21	45.13	62.66	17.53	QP
	0.440	33.64	0.22	33.86	57.07	23.21	
	0.826	28.56	0.23	28.79	56.00	27.21	
	4.049	30.87	0.33	31.20	56.00	24.80	
	11.438	36.58	0.59	37.17	60.00	22.83	
	17.383	35.81	0.56	36.37	60.00	23.63	
	0.224	40.92	0.21	41.13	52.66	11.53	AV
	0.440	30.64	0.22	30.86	47.07	16.21	
	0.826	21.56	0.23	21.79	46.00	24.21	
	4.049	25.87	0.33	26.20	46.00	19.80	
	11.438	31.58	0.59	32.17	50.00	17.83	
	17.383	30.81	0.56	31.37	50.00	18.63	

TEST ENGINEER: YONG XU

EUT : LCD Monitor Temperature : 21°C

Model No. : W1954TQV Humidity : 50%RH

Serial No. : E2008112705 Date of Test : Nov 29, 2008

Test Mode : DVI 640*480@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	52.54	0.22	52.76	65.87	13.11	QP
	0.230	41.69	0.21	41.90	62.44	20.54	
	0.535	33.03	0.22	33.25	56.00	22.75	
	0.731	43.04	0.23	43.27	56.00	12.73	
	7.606	27.42	0.56	27.98	60.00	32.02	
	18.328	23.50	0.72	24.22	60.00	35.78	
	0.152	45.16	0.22	45.38	55.87	10.49	AV
	0.230	35.21	0.21	35.42	52.44	17.02	
	0.535	27.30	0.22	27.52	46.00	18.48	
	0.731	37.90	0.23	38.13	46.00	7.87	
	7.606	20.49	0.56	21.05	50.00	28.95	
	18.328	18.50	0.72	19.22	50.00	30.78	
Neutral	0.152	52.94	0.19	53.13	65.87	12.74	QP
	0.230	42.98	0.21	43.19	62.44	19.25	
	0.731	41.59	0.23	41.82	56.00	14.18	
	1.000	24.81	0.23	25.04	56.00	30.96	
	5.058	35.92	0.36	36.28	60.00	23.72	
	10.125	36.94	0.60	37.54	60.00	22.46	
	0.152	47.21	0.19	47.40	55.87	8.47	AV
	0.230	35.24	0.21	35.45	52.44	16.99	
	0.731	35.20	0.23	35.43	46.00	10.57	
	1.000	19.50	0.23	19.73	46.00	26.27	
	5.058	29.30	0.36	29.66	50.00	20.34	
	10.125	30.21	0.60	30.81	50.00	19.19	

TEST ENGINEER: YONG XU

EUT : LCD Monitor Temperature : 21°C

Model No. : W1954TQV Humidity : 50%RH

Serial No. : E2008112705 Date of Test : Nov 29, 2008

Test Mode : DVI 1024*768@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.153	52.22	0.22	52.44	65.82	13.38	QP
	0.232	41.09	0.21	41.30	62.39	21.09	
	0.731	42.90	0.23	43.13	56.00	12.87	
	3.074	28.90	0.33	29.23	56.00	26.77	
	10.233	30.38	0.61	30.99	60.00	29.01	
	20.486	27.43	0.74	28.17	60.00	31.83	
	0.153	47.50	0.22	47.72	55.82	8.10	AV
	0.232	35.60	0.21	35.81	52.39	16.58	
	0.731	36.25	0.23	36.48	46.00	9.52	
	3.074	23.47	0.33	23.80	46.00	22.20	
	10.233	25.09	0.61	25.70	50.00	24.30	
	20.486	22.80	0.74	23.54	50.00	26.46	
Neutral	0.155	52.78	0.19	52.97	65.74	12.77	QP
	0.232	42.42	0.21	42.63	62.39	19.76	
	0.731	41.63	0.23	41.86	56.00	14.14	
	4.525	32.99	0.34	33.33	56.00	22.67	
	10.288	37.27	0.60	37.87	60.00	22.13	
	20.594	39.48	0.57	40.05	60.00	19.95	
	0.155	46.20	0.19	46.39	55.74	9.35	AV
	0.232	36.10	0.21	36.31	52.39	16.08	
	0.731	34.20	0.23	34.43	46.00	11.57	
	4.525	26.50	0.34	26.84	46.00	19.16	
	10.288	32.13	0.60	32.73	50.00	17.27	
	20.594	33.60	0.57	34.17	50.00	15.83	

TEST ENGINEER: YONG XU

EUT : LCD Monitor Temperature : 21°C

Model No. : W1954TQV Humidity : 50%RH

Serial No. : E2008112705 Date of Test : Nov 29, 2008

Test Mode : DVI 1440*900@60Hz

Test Line	Frequency (MHz)	Meter Reading dB(μV)	Factor (dB)	Emission Level dB(μV)	Limits dB(μV)	Margin (dB)	Remark
Line	0.152	52.54	0.22	52.76	65.87	13.11	QP
	0.230	41.31	0.21	41.52	62.44	20.92	
	0.731	42.86	0.23	43.09	56.00	12.91	
	2.309	28.86	0.30	29.16	56.00	26.84	
	10.397	29.78	0.61	30.39	60.00	29.61	
	13.623	27.00	0.69	27.69	60.00	32.31	
	0.152	46.29	0.22	46.51	55.87	9.36	AV
	0.230	35.12	0.21	35.33	52.44	17.11	
	0.731	35.10	0.23	35.33	46.00	10.67	
	2.309	22.80	0.30	23.10	46.00	22.90	
	10.397	23.97	0.61	24.58	50.00	25.42	
	13.623	22.00	0.69	22.69	50.00	27.31	
Neutral	0.153	52.96	0.19	53.15	65.82	12.67	QP
	0.230	42.58	0.21	42.79	62.44	19.65	
	0.535	34.30	0.22	34.52	56.00	21.48	
	0.731	41.57	0.23	41.80	56.00	14.20	
	5.836	33.47	0.40	33.87	60.00	26.13	
	20.594	41.30	0.57	41.87	60.00	18.13	
	0.153	46.50	0.19	46.69	55.82	9.13	AV
	0.230	36.10	0.21	36.31	52.44	16.13	
	0.535	28.90	0.22	29.12	46.00	16.88	
	0.731	35.85	0.23	36.08	46.00	9.92	
	5.836	27.30	0.40	27.70	50.00	22.30	
	20.594	34.26	0.57	34.83	50.00	15.17	

TEST ENGINEER: YONG XU

4 RADIATED EMISSION TEST

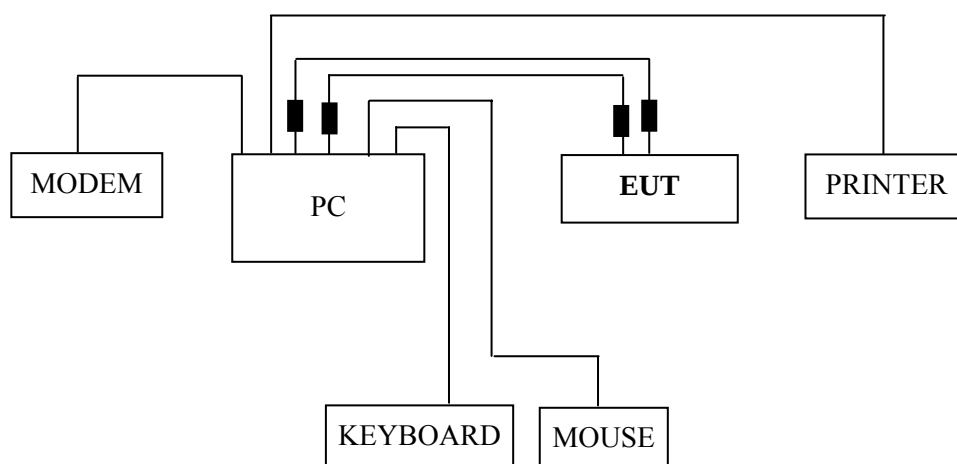
4.1 Test Equipment

The following test equipments are used during the radiated emission test in a semi-anechoic chamber:

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
1.	Test Receiver	R&S	ESVS10	844594/001	Mar 07, 2008	Mar 07, 2009
2.	Preamplifier	Agilent	8447D	2944A10548	Sep 19, 2008	Mar 19, 2009
3.	Preamplifier	HP	8449B	3008A00864	May 19, 2008	May 19, 2009
4.	Bi-log Antenna	TESEQ	CBL6112D	23193	May 14, 2008	May 14, 2009
5.	Spectrum	Agilent	E7405A	MY45106600	May 19, 2008	May 19, 2009
6.	Software	Audix	E3	SET00200 9912M295-2	--	--

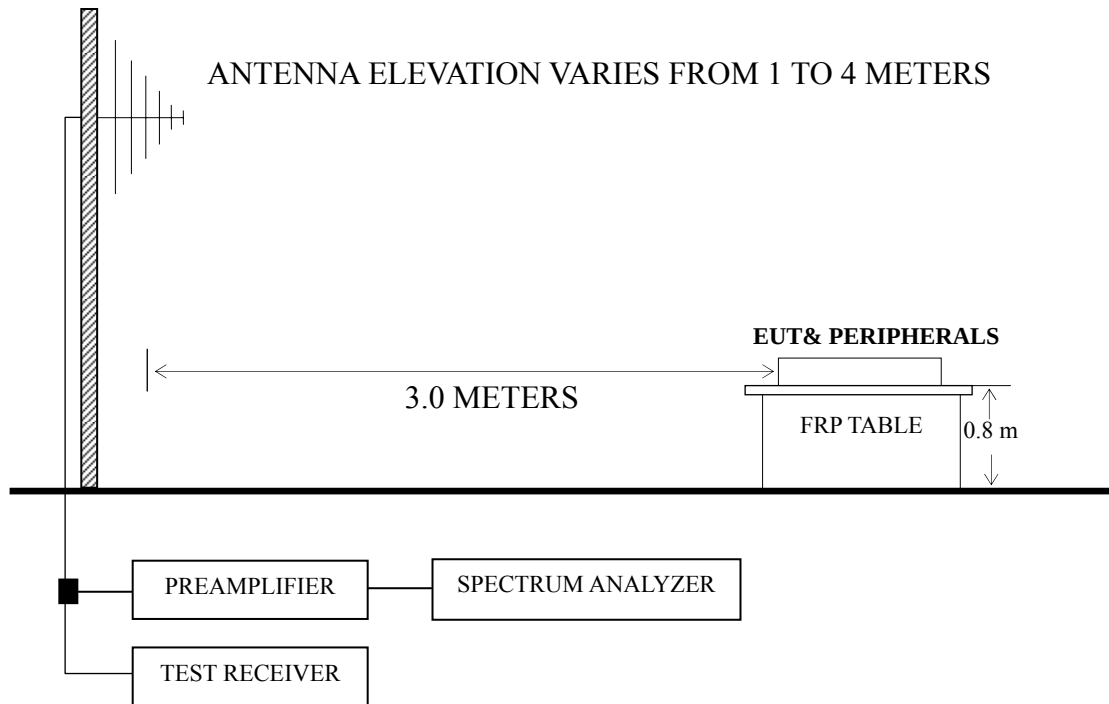
4.2 Block Diagram of Test Setup

4.2.1 EUT and Peripherals



■ : Ferrite core

4.2.2 Radiated emission test setup



■ : 50 ohm Coaxial Switch

4.3 Radiated Emission Limit [FCC Part 15 Subpart B 15.109(a)]

Frequency (MHz)	Distance (m)	Field strength limits	
		($\mu\text{V/m}$)	dB ($\mu\text{V/m}$)
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0

NOTE 1 - Emission Level dB ($\mu\text{V/m}$) = 20 log Emission Level ($\mu\text{V/m}$)

NOTE 2 - The tighter limit applies at the band edges.

NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

NOTE 4 - The limits shown are based on Quasi-peak value detector below or equal to 1GHz and Average value detector above 1GHz.

NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT

4.4 Test Configuration

The configuration of the EUT and peripherals are same as those used in conducted emission test.

Please refer to Sec.3.4.

4.5 Operating Condition of EUT

Same as conducted emission test which is listed in Sec.3.5, except for the test setup replaced by Sec.4.2.

4.6 Test Procedures

The EUT and peripherals were placed on a FRP turntable that is 0.8 meter above ground. The FRP turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. Broadband antenna (Calibrated Bilog Antenna) was used as receiving antenna. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.4:2003 requirements during radiated emission test.

The bandwidth of Test Receiver R&S ESVS10 was set at 120 kHz below 1GHz and The Spectrum Agilent E7405A was set at 1MHz above 1GHz.

The frequency range from 30 MHz to 1000MHz was checked for all test modes.

The frequency range from 1 GHz to 2 GHz was checked for D-Sub 1440*900@75Hz & DVI 1440*900@60Hz modes.

The test modes were done on radiated disturbance test and all the test results are listed in Sec.4.7.

4.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

Test Mode	Data Page
D-Sub 640*480@60Hz	P22
D-Sub 1024*768@60Hz	P23
D-Sub 1440*900@75Hz	P24
DVI 640*480@60Hz	P25
DVI 1024*768@60Hz	P26
DVI 1440*900@60Hz	P27

- NOTE 1 – Emission Level = Antenna Factor + Cable Loss + Meter Reading.($< 1\text{GHz}$)
- NOTE 2 – Emission Level = Antenna Factor + Cable Loss – Preamp Factor + Meter Reading.($> 1\text{GHz}$)
- NOTE 3 – The emission levels that are 20dB below the official limit are not reported.
- NOTE 4 – 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.
- NOTE 5 – All reading are Quasi-Peak values below or equal to 1GHz and Peak values above 1GHz. For measurements above 1 GHz, the peak measured value complies with the average limit, it is unnecessary to perform an average measurement.
- NOTE 6 – The worst case is for D-Sub 1440*900@75Hz test mode. The worst emission at horizontal polarization was detected at 142.520MHz with corrected signal level of 34.44 dB ($\mu\text{V/m}$) (limit is 43.50 dB ($\mu\text{V/m}$)), when the antenna was 1.30 m height and the turntable was at 220° . The worst emission at vertical polarization was detected at 32.910 MHz with corrected signal level of 35.64 dB ($\mu\text{V/m}$) (limit is 40.00 dB ($\mu\text{V/m}$)), when the antenna was 1.00 m height and the turntable was at 290° .

EUT : LCD Monitor Temperature : 22°C

Model No. : W1954TQV Humidity : 60%RH

Serial No. : E2008112705 Date of Test : Dec 05, 2008

Test Mode : D-Sub 640*480@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	142.520	14.29	11.91	0.91	27.11	43.50	16.39
	200.720	16.52	10.74	1.08	28.34	43.50	15.16
	257.950	14.92	13.06	1.31	29.29	46.00	16.71
	315.180	14.41	14.32	1.62	30.35	46.00	15.65
	372.410	16.72	15.92	1.91	34.55	46.00	11.45
	544.100	11.40	18.49	2.48	32.37	46.00	13.63
Vertical	32.910	16.94	17.95	0.60	35.49	40.00	4.51
	95.960	17.12	10.70	0.85	28.67	43.50	14.83
	372.410	19.80	15.92	1.91	37.63	46.00	8.37
	429.640	15.80	16.92	2.14	34.86	46.00	11.14
	544.100	18.49	18.49	2.48	39.46	46.00	6.54
	658.560	11.39	19.49	2.87	33.75	46.00	12.25

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : W1954TQV Humidity : 60%RH

Serial No. : E2008112705 Date of Test : Dec 05, 2008

Test Mode : D-Sub 1024*768@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	142.520	19.04	11.91	0.91	31.86	43.50	11.64
	257.950	15.15	13.06	1.31	29.52	46.00	16.48
	401.510	12.84	16.52	2.04	31.40	46.00	14.60
	544.100	14.45	18.49	2.48	35.42	46.00	10.58
	658.560	8.01	19.49	2.87	30.37	46.00	15.63
	831.220	6.27	21.01	3.38	30.66	46.00	15.34
Vertical	31.940	15.21	18.49	0.59	34.29	40.00	5.71
	87.230	19.84	8.96	0.86	29.66	40.00	10.34
	96.930	17.94	10.87	0.85	29.66	43.50	13.84
	142.520	18.44	11.91	0.91	31.26	43.50	12.24
	372.410	19.33	15.92	1.91	37.16	46.00	8.84
	544.100	17.39	18.49	2.48	38.36	46.00	7.64

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : W1954TQV Humidity : 60%RH

Serial No. : E2008112705 Date of Test : Dec 05, 2008

Test Mode : D-Sub 1440*900@75Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	142.520	21.62	11.91	0.91	--	34.44	43.50	9.06	QP
	182.290	22.31	9.99	1.03	--	33.33	43.50	10.17	
	372.410	16.09	15.92	1.91	--	33.92	46.00	12.08	
	429.640	12.92	16.92	2.14	--	31.98	46.00	14.02	
	544.100	10.79	18.49	2.48	--	31.76	46.00	14.24	
	831.220	6.97	21.01	3.38	--	31.36	46.00	14.64	
	1060.000	54.50	22.82	3.99	37.54	43.77	74.00	30.23	PK
	1167.000	57.30	23.54	4.16	37.25	47.75	74.00	26.25	
	1229.000	51.65	23.94	4.24	37.10	42.73	74.00	31.27	
	1385.000	51.57	25.13	4.54	36.76	44.48	74.00	29.52	
	1496.000	48.18	25.80	4.71	36.54	42.15	74.00	31.85	
	1637.000	49.83	26.49	4.99	36.27	45.04	74.00	28.96	
Vertical	32.910	17.09	17.95	0.60	--	35.64	40.00	4.36	QP
	91.110	23.76	9.65	0.86	--	34.27	43.50	9.23	
	168.710	22.74	10.25	0.99	--	33.98	43.50	9.52	
	372.410	19.11	15.92	1.91	--	36.94	46.00	9.06	
	544.100	18.81	18.49	2.48	--	39.78	46.00	6.22	
	658.560	13.43	19.49	2.87	--	35.79	46.00	10.21	
	1088.000	54.78	23.02	4.02	37.46	44.36	74.00	29.64	PK
	1171.000	50.23	23.56	4.16	37.24	40.71	74.00	33.29	
	1325.000	49.67	24.70	4.42	36.89	41.90	74.00	32.10	
	1416.000	51.19	25.31	4.57	36.70	44.37	74.00	29.63	
	1623.000	45.69	26.45	4.99	36.30	40.83	74.00	33.17	
	1759.000	54.62	26.80	5.19	36.06	50.55	74.00	23.45	

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : W1954TQV Humidity : 60%RH

Serial No. : E2008112705 Date of Test : Dec 05, 2008

Test Mode : DVI 640*480@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	142.520	15.97	11.91	0.91	28.79	43.50	14.71
	200.720	18.77	10.74	1.08	30.59	43.50	12.91
	372.410	17.33	15.92	1.91	35.16	46.00	10.84
	486.870	16.81	17.75	2.33	36.89	46.00	9.11
	515.970	14.70	18.09	2.42	35.21	46.00	10.79
	544.100	15.31	18.49	2.48	36.28	46.00	9.72
Vertical	31.940	16.25	18.49	0.59	35.33	40.00	4.67
	100.810	17.96	11.57	0.85	30.38	43.50	13.12
	142.520	17.07	11.91	0.91	29.89	43.50	13.61
	372.410	20.41	15.92	1.91	38.24	46.00	7.76
	515.970	15.66	18.09	2.42	36.17	46.00	9.83
	544.100	17.54	18.49	2.48	38.51	46.00	7.49

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : W1954TQV Humidity : 60%RH

Serial No. : E2008112705 Date of Test : Dec 05, 2008

Test Mode : DVI 1024*768@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)
Horizontal	142.520	17.31	11.91	0.91	30.13	43.50	13.37
	372.410	13.62	15.92	1.91	31.45	46.00	14.55
	429.640	14.02	16.92	2.14	33.08	46.00	12.92
	486.870	16.37	17.75	2.33	36.45	46.00	9.55
	515.970	15.00	18.09	2.42	35.51	46.00	10.49
	831.220	6.87	21.01	3.38	31.26	46.00	14.74
Vertical	32.910	17.07	17.95	0.60	35.62	40.00	4.38
	372.410	19.63	15.92	1.91	37.46	46.00	8.54
	429.640	17.80	16.92	2.14	36.86	46.00	9.14
	486.870	18.43	17.75	2.33	38.51	46.00	7.49
	544.100	18.21	18.49	2.48	39.18	46.00	6.82
	658.560	14.72	19.49	2.87	37.08	46.00	8.92

TEST ENGINEER: RAVEN JIN

EUT : LCD Monitor Temperature : 22°C

Model No. : W1954TQV Humidity : 60%RH

Serial No. : E2008112705 Date of Test : Dec 05, 2008

Test Mode : DVI 1440*900@60Hz

Polarization	Frequency (MHz)	Meter Reading dB (μV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Emission Level dB (μV/m)	Limits dB (μV/m)	Margin (dB)	Remark
Horizontal	166.770	14.58	10.31	0.98	--	25.87	43.50	17.63	QP
	232.730	15.55	12.24	1.21	--	29.00	46.00	17.00	
	257.950	14.76	13.06	1.31	--	29.13	46.00	16.87	
	429.640	15.47	16.92	2.14	--	34.53	46.00	11.47	
	486.870	13.90	17.75	2.33	--	33.98	46.00	12.02	
	515.970	13.41	18.09	2.42	--	33.92	46.00	12.08	
	1119.000	53.91	23.24	4.07	37.37	43.85	74.00	30.15	PK
	1235.000	51.43	23.98	4.27	37.09	42.59	74.00	31.41	
	1368.000	51.28	25.01	4.51	36.79	44.01	74.00	29.99	
	1499.000	52.15	25.80	4.71	36.53	46.13	74.00	27.87	
	1643.000	50.60	26.50	5.02	36.26	45.86	74.00	28.14	
	1762.000	51.65	26.81	5.19	36.06	47.59	74.00	26.41	
Vertical	32.910	16.62	17.95	0.60	--	35.17	40.00	4.83	QP
	97.900	18.38	11.11	0.85	--	30.34	43.50	13.16	
	126.030	15.70	12.71	0.89	--	29.30	43.50	14.20	
	429.640	13.32	16.92	2.14	--	32.38	46.00	13.62	
	515.970	12.96	18.09	2.42	--	33.47	46.00	12.53	
	658.560	9.95	19.49	2.87	--	32.31	46.00	13.69	
	1088.000	52.05	23.02	4.02	37.46	41.63	74.00	32.37	PK
	1246.000	50.64	24.06	4.27	37.07	41.90	74.00	32.10	
	1432.000	50.27	25.38	4.60	36.66	43.59	74.00	30.41	
	1603.000	46.24	26.40	4.92	36.33	41.23	74.00	32.77	
	1675.000	52.17	26.59	5.08	36.21	47.63	74.00	26.37	
	1762.000	52.50	26.81	5.19	36.06	48.44	74.00	25.56	

TEST ENGINEER: RAVEN JIN

5 DEVIATION TO TEST SPECIFICATIONS

None.

6 DEBUG DESCRIPTION

The following components are used during the countermeasure procedures:

Name	M/N	Specifications (mm)	Manufacturer	Location
Aluminum foil	T-308	50*30	DAEHUNG SUBSIDIARY MATERIALS.	See Internal Photos 1,2, 11, 12, 14, 15